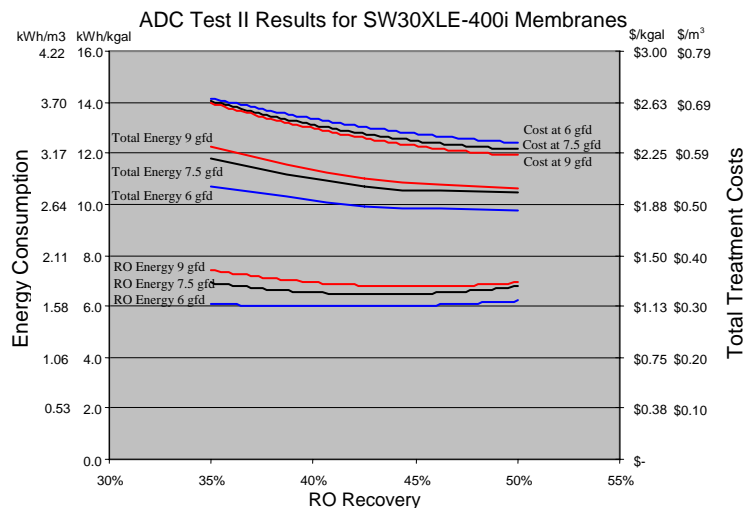


# Affordable Desalination Sets Low Energy Record May 4, 2006

**San Leandro, CA (May 4, 2006)** – The Affordable Desalination Collaboration (ADC) completed the second of three tests and achieved a world record for seawater desalination by reverse osmosis. Located at the U.S. Navy's Seawater Desalination Test Facility in Port Hueneme, California, the ADC has built a demonstration plant that utilizes Energy Recovery's Pressure Exchanger technology to create an ultra-efficient seawater reverse osmosis (SWRO) system.

This second test included operating the plant at the same nine conditions as the first, but with the new FILMTEC SW30XLE-400i "low energy" membranes. During this test the ADC achieved what they believe is a world record for low energy seawater desalination by reverse osmosis at 6.00 kWh/kgal (1.58 kWh/m<sup>3</sup>). The operating conditions at this low point were 6 gfd and 43% recovery.

The ADC's net present value (NPV) model however, selected a different point as the most affordable. The NPV model, developed by Carollo Engineers for the ADC, takes a conceptual look at a 30 year life cycle for a 50 mgd SWRO plant and includes overall treatment costs such as intake and distribution power, chemicals, maintenance, replacement, labor, capital costs and interest on capital. The graph below shows that the most affordable operating point was at 9 gfd and 50% recovery where the SWRO process consumed approximately 6.93 kWh/kgal (1.83 kWh/m<sup>3</sup>) and the total treatment costs are projected to be \$2.37/kgal (0.63/m<sup>3</sup>).

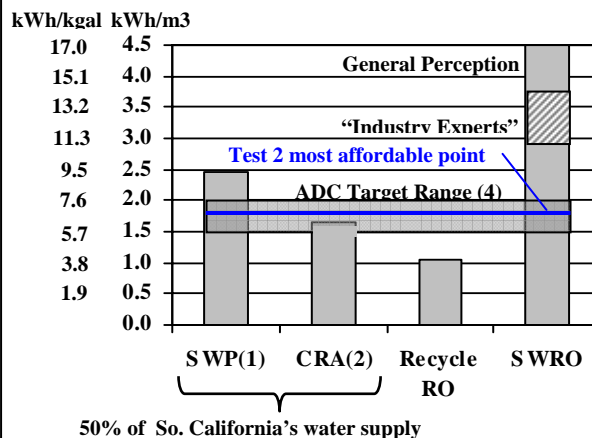


Note: Treatment costs do not include land, depreciation, distribution improvements, intake capital costs or owner oversight/management costs, and they assume co-location with an existing power plant or other existing intake system.

These results from the new "low energy" membranes represent an approximate 5% reduction in treatment costs below the "classic" SW30HR-380 membranes tested in Set I. The complete data and analyses are available on their web site at [www.affordabledesal.com](http://www.affordabledesal.com).

Although the Set II membranes have produced the lowest energy numbers it has been at the expense of permeate water quality. For Set II the total dissolved solids (TDS) ranged from 190-379 mg/l TDS over the nine operating points, and Boron varied from 1.04-1.45. At the most affordable point, 9 gfd and 50% recovery TDS was 231 mg/l and Boron was 1.11 mg/l. Next they will be looking to the final set III SW30HR LE-400i membranes where they hope to find a balance between power consumption and permeate quality.

## Various Energy Requirements and the ADC



1. SWP = California State Water Project; 2. CRA = Colorado River Aqueduct Project; 3. SWP numbers do not include distribution beyond Castaic Lake or treatment; 4. ADC target range does not include supply or distribution. I.e. RO process only; 5. Source: Water Sources Powering Southern California, by Robert C. Wilkinson Ph.D., 01/04

The ADC is a non-profit organization comprised of the following group of leading companies, state and government agencies.

- Avista Technologies, Inc.
- California Department of Water Resources
- California Energy Commission
- Carollo Engineers
- City of Santa Cruz Water Department
- David Brown Union Pump Comp.-subsidiary of Textron
- Eden Equipment Company, Inc.
- Energy Recovery, Inc.
- FilmTec Corporation
- Marin Municipal Water District
- Municipal Water District of Orange County
- Naval Facilities Engineering Service Center
- Pentair Water Treatment-CodeLine Division
- Piedmont Pacific Corporation
- Poseidon Resources
- Rolled Alloys
- Sandia National Laboratories
- San Diego County Water Authority
- U.S. Bureau of Reclamation
- U.S. Desalination Coalition
- Young Engineering & Manufacturing, Inc.
- WaterEye
- West Basin Municipal Water District

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